

20-2-24/60

Anionotropic Rearrangement of Substituted Perfluoropropenes

tions of perfluorallylchloride $\text{CF}_2=\text{CF}-\text{CF}_2\text{Cl}$. There also exists information according to which influence of nucleophile reagents on perfluorallylchloride leads to a substitution of chlorine by a corresponding anion. It has to be assumed that this is the result of the conjugation of the bond C-Cl with the double bond. The authors of the present paper investigated the reactions of perfluorallylchloride with sodium methylate and diethylamine. The interaction with the sodium methylate leads to the perfluorallylmethylether. This reaction represents a new solution for arriving at the derivatives of the perfluoracrylic acid. The ether is polymerized even at a lower temperature. The reaction of perfluorallylchloride with diethylamine has a light course. The perfluorallyldiethylamine produced as result of this reaction rearranges itself, still during the reaction, into perfluorpropenyldiethylamine. Hydrolysis of the latter leads to diethylamide of the α -hydroperfluorpropionic acid. Bromination of the perfluorpropenyldiethylamine with a subsequent hydrolysis results in diethylamide of the α -bromoperfluorpropionic acid. The above isomerization represents an allylic rearrangement and probably is caused by the tendency towards formation of a stabler system, and this owing to the conjugation of a double bond

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with an unseparated electron pair of the substituent in the allylic position. The velocity of the rearrangement depends of the degree of mobility of the electron pair. Different compounds are arranged in a series in accordance with the criterion of stability. The experimental part of the paper under review contains the production methods together with the constants and yields of the substances investigated. There are 3 references, 1 of which is Soviet..

SUBMITTED: January 18, 1957

AVAILABLE: Library of Congress

Card 3/3

DYATKIN, B. L.: Master Chem Sci (diss) -- "The conjugation of bonds in poly-fluoro olefins". Moscow, 1958. 12 pp (Acad Sci USSR, Inst of Organoelemental Compounds), 150 copies (KL, No 6, 1959, 126)

62-58-3-6/30

AUTHORS: Knunyants, I. L. , Sterlin, R. N. , Pinkina, L. N. ,
Dyatkin, B. L.

TITLE: Reactions of Fluorolefins. (Reaktsii ftorolefinov)
Communication 7. Addition Compounds of Acid Chlorides to
Vinylidene Fluoride and Trifluoroethylene (Soobshcheniye 7.
Prisoyedineniye khlorangidriđov kislot k ftoristomu vinili-
denu i triftoretilenu)

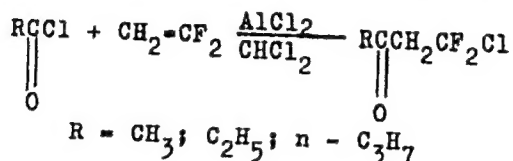
PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
1958, Nr 3, pp. 296 - 299 (USSR)

ABSTRACT: The addition of alkyl halides discovered by Kondakov was later
developed by others. In the present paper the authors show
that such fluorolefins as vinylidene fluoride and trifluor-
ethylene (in the presence of nonaqueous $AlCl_3$) possess the
capability of combining with carboxyl chlorides and thereby
forming the corresponding fluoro-substituted ketones. Vinyli-
dene fluoride very readily combines with the acid chlorides
of butyric acid and propionic acid at a temperature of
-5 to -10°C in the presence of equivalent quanta of $AlCl$ in

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Reactions of Fluorolefins. Communication 7. Addition Compounds of Acid Chlorides to Vinylidene Fluoride and Trifluoroethylene 62-58-3-6/30

pure chloroform, where alkyl-2-chloro-2,2-difluoroethylketones with yields of 44,48 and 33 % form:



At the same time substances form which correspond to the products of the partial or complete substitution of fluorine in chlorine and the products of further condensation. The authors obtained: methyl-2-chloro-2,2-difluoroethylketone and methyl-2-chloro-1,2,2-trifluoroethylketone. There are 8 references, 2 of which are Soviet.

SUBMITTED: November 3, 1956

Card 2/2

SOV/63-3-6-30/41

AUTHORS: Knunyants, I.L., Dyatkin, B.L., German, L.S.

TITLE: Reactions of Perfluoroacrylonitril (Reaktsii perftorakrilonitrila)

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1958, Vol III, Nr 6, pp 828-829 (USSR)

ABSTRACT: It has been shown that pure perfluoroacrylonitril easily reacts with methanol and ethanol producing β -alkoxy- α -hydroperfluoropropionitrils. It reacts also with piperidine and aniline in an ether solution producing amine fluorohydrate. There is 1 table and 2 non-Soviet references.

ASSOCIATION: Institut elementarnykh soedineniy Akademii nauk SSSR (Institute of Elemental-Organic Compounds of the USSR Academy of Sciences)

SUBMITTED: July 10, 1958

Card 1/1

AUTHORS: Knunyants, I. L., Dyatkin, B. L. 62-58-5-25/27

TITLE: Interaction of Some Fluorine Olefins With Phenols (Vzaimo-deystviye nekotorykh ftorolefinov s fenolami)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk 1958, Nr 5, pp. 648-650 (USSR)

ABSTRACT: The special character of the binary bond of perfluoroisobutylene and perfluoracrylonitrile consists among other of the fact that these compounds are easily subjected to an interaction with nucleophile reagents. Alcohols associate in this way without alkaline catalysts and without heating. In the case of perfluoroisobutylene, a substitution of the fluorine-vinyl atom into the alkoxy-group takes place. It was therefore of interest to investigate the behavior of these fluorolefines with respect to phenols. In the present report the authors describe the carried out non-catalytic compound of phenol and hydroquinone with fluoroisobutylene and perfluorakrylonitrile. Concluding, the description of the obtaining of phenylperfluorallylester by the interaction of perfluorallylchloride with potassium phenolate is given. There are 1 table and 5 references, 2 of which are Soviet.

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Interaction of Some Fluorine Olefins With Phenols

62-58-5-25/27

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute for ~~Elemental~~-organic Compounds AS USSR)

SUBMITTED: January 4, 1956

1. Ethylenes---Chemical reactions 2. Phenols---Chemical reactions

Card 2/2

5(3)

AUTHORS:

Knunyants, I. L., Academician,
Dyatkin, B. L., German, L. S.

SOV/20-124-5-28/62

TITLE:

Reactions of Hexafluoro Butadiene-1,3 With Alcohols and Amines
(Reaktsii geksaftorbutadiyena-1,3 so spirtami i aminami)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, pp 1065-1068
(USSR)

ABSTRACT:

The reactivity of the 1,3-dienes of the perfluoro-carbon series has hardly been investigated (Refs 1-3). The reactions with nucleophilic reagents which very characteristic of fluoro olefins, have hitherto not been investigated in the case of perfluoro butadiene. These reactions are of particular interest for an understanding of the nature of the conjugated bonds in perfluorated dienes. Here, as distinguished from diene hydrocarbons, a negative rather than a positive charge is to be transmitted along the chain. By the interaction of perfluoro butadiene with sodium ethylate in ethanol the authors obtained a substance which separated HF and formed 1,4-diethoxyperfluoro butadiene-1,3 when isolation in a pure condition was attempted. The treatment of the latter compound with concentrated sulphuric acid resulted in the formation of the diethyl esters of

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Reactions of Hexafluoro Butadiene-1,3 With Alcohols
and Amines

SOV/20-124-5-28/62

fluoro ethylene-1,2-dicarboxylic acid. This ester was transformed into 3-carbethoxy-pyrazolone-5 by the action of hydrazine hydrate. Thus, perfluorobutadiene reacts with two alcohol molecules in the presence of alcoholate. In this connection the terminal carbon atoms are subjected to the nucleophilic attack. Heating of perfluoro butadiene with alcohol in the presence of triethylamine causes the addition of one alcohol molecule. The infrared spectrum and the nuclear-magnetic resonance of F^{19} suggest a 1,4 affiliation. Under mild conditions perfluoro butadiene reacts with the secondary and primary aliphatic amines. With diethylamine it forms the unstable 1-diethylamine-perfluorobutadiene-1,3, which is readily hydrolyzed to form the diethylamide of α -hydroperfluoro vinylacetic acid. A similar reaction is that of perfluoro butadiene with piperidine. By the interaction of perfluoro butadiene with ethylamine and the hydrolysis of the reaction products ethylamide of the last mentioned acid and bis-ethylamide of fluoro ethylene-1,2-dicarboxylic acid was produced. In this case the resulting bis-ethylamide of symmetrical

Card 2/3

Reactions of Hexafluoro Butadiene-1,3 With Alcohols
and Amines

SOV/20-124-5-28/62

difluorosuccinic acid loses only a single HF molecule (as in the case of the ester) and forms a corresponding derivative of fluoro ethylene-1,2-dicarboxylic acid. There are 3 references.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute for Elemental-Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: November 21, 1958

Card 3/3

DYATKIN, B. L.

02010
S/062/60/000/02/03/012
B003/B066

5.3600

AUTHORS:

Knunyants, I. L., German, L. S., Dyatkin, B. L.

TITLE:

Reactions of Fluoro-olefins. 11th Report. Interaction of
Compounds of the Perfluoro Isobutylene Series With Amines
and Ammonia

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 2, pp. 221 - 230

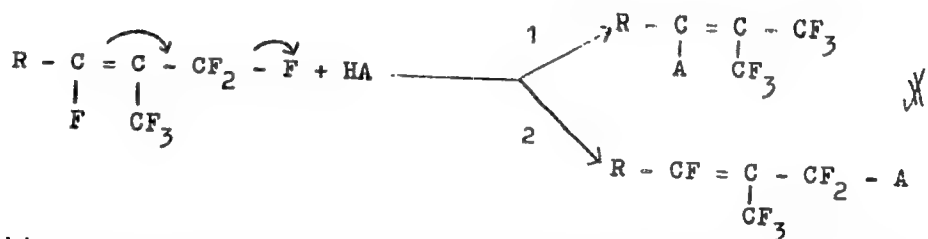
TEXT: The authors investigated the reactions of 1-alkyl-, 1-alkoxy-, and 1-aryl-perfluoro isobutylenes with amines and ammonia. (The following compounds were subjected to the experiments: 1-phenyl perfluoro isobutylene, 1-phenyl perfluoro propylene, $\alpha, \beta, \beta, \beta$ -tetrafluoro propiophenone, 1-phenyl-1,2-dibromo-perfluoro propane, 1-butyl perfluoro isobutylene, 1-styryl-perfluoro isobutylene, 1-ethylperfluoroisobutylene, 1-isoamylperfluoroisobutylene, anhydrous ammonia, ammonium hydroxide, ethyl amine, diethyl amine, and piperidine. The preparation of the compounds and their reactions are described in detail in the experimental part of the paper.) 1-alkyl- and 1-aryl perfluoro isobutylenes react with

Card 1/3

Reactions of Fluoro-olefins. 11th Report.
Interaction of Compounds of the Perfluoro
Isobutylene Series With Amines and Ammonia

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B003/B066

nucleophilic agents in two ways according to the following scheme:



Whether this reaction proceeds according to 1 or 2, depends on the character of the olefin as well as on the attacking reagent. Under the action of anhydrous NH_3 the reaction takes place in all perfluoro isobutylenes investigated. 1-alkyl- and 1-aryl perfluoro isobutylenes react with secondary amines according to Scheme 2. The action of excess NH_4OH eliminates fluorine completely. There are 5 references: 2 Soviet, 1 German, 1 American, and 1 Canadian.

Card 2/3

Reactions of Fluoro-olefins. 11th Report.
Interaction of Compounds of the Perfluoro
Isobutylene Series With Amines and Alcohols

82040
S/062/60/000/02/03/012
B003/B066

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute of Elemental-organic Compounds of the
Academy of Sciences USSR)

SUBMITTED: July 4, 1958

X

Card 3/3

DYATKIN, B. L.

82041
S/062/60/000/02/04/012
B003/B066

53600

AUTHORS: Knunyants, I. L., Dyatkin, B. L., German, L. S.,
Mochalina, Ye. P.

TITLE: Reactions of Fluoro-olefins. 12th Report. Interactions of
Polyfluoro-chloro Butenes With Alcohols

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1960, No. 2, pp. 231 - 236

TEXT: The authors investigate the action of sodium methylate and ethylate on linear dimers of 1,2-difluoro-1,2-dichloro ethylene and trifluoro-chloro ethylene. The experiment is described in detail in the experimental part of the paper. The structure was clarified by means of infrared spectrography. The investigations revealed that the reaction of 1,2,3,4-tetrafluoro-1,3,4,4-tetrachloro butene-1 with the alcoholates mentioned yields 1,1,1-trialkoxy-2,3,4-trifluoro-4,4-dichloro butene-2. When treating the linear dimer of trifluoro-chloro ethylene with the alcoholates, 3-alkoxy-4-chloro-perfluoro butene-1 results. The linear dimer of trifluoro-chloro ethylene was identified to be a mixture of

Card 1/2

15.8160

25481
S/020/61/139/001/013/018
B103/B226

AUTHORS: Dyatkin, B. L., Mochalina, Ye. P., and Knunyants, I. L.,
Academician

TITLE: Condensation of formaldehyde with perfluoro olefines -
tetrafluoro ethylene, hexafluoro propylene, and trifluoro
chloroethylene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 1, 1961, 106-109

TEXT: The authors continued the investigation of chlorosulfonic acid as a
catalyst of H. Prins' reaction (Ref. 1: Rec. trav. chim., 51, 469 (1932))
and endeavored to use this acid when extending the Prins reaction to
perfluoro olefines: tetrafluoro ethylene, hexafluoro propylene, and
trifluoro chloroethylene, in their interaction with formaldehyde. As is
known, the Prins reaction belongs to the typical reactions of hydrocarbon
olefines with electrophile reagents; especially, in this case, the
condensation with formaldehyde in the presence of strong acids is meant.
Such reactions are very difficult and, therefore, little investigated. The
authors demonstrated by means of 1,2-difluoro-1,2-dichloro ethylene that

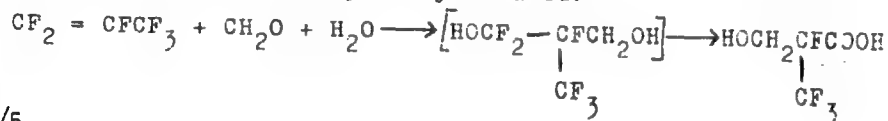
Card 1/5

25481

S/020/61/133/001/013/018
B103/B226

Condensation of formaldehyde...

both chlorosulfonic and fluorosulfonic acid are in this case highly effective catalysts of the Prins reaction, while H_2SO_4 of various concentrations could not release this reaction (I. L. Knunyants et al. Ref. 5: Zhurn. Vsesoyuzn. khim. obshch. im. Mendeleeva, c. 114 (1961)). It has been proved that a mixture of tetrafluoro ethylene $CF_2 = CFCI$, paraformaldehyde, and chlorosulfonic acid, heated up to $100^\circ C$, is subject to a condensation according to the general scheme of the Prins reaction, and yields α, α -difluoro hydracrylic acid which is isolated as its ethyl ester. As the yield of this ester was 67.6 %, the authors were of the opinion that chlorosulfonic acid is much more active than H_2SO_4 . The condensation of paraformaldehyde with hexafluoro propylene leads in the presence of chlorosulfonic acid at $130 - 150^\circ C$ to a 41-% yield of α -fluoro- α -trifluoro methyl hydracrylic acid:



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Condensation of formaldehyde...

The formation of this acid is in accord with the polarization of the double bond in hexafluoro propylene $\overset{\delta+}{\text{CF}_2} = \overset{\delta-}{\text{CF}}\text{CF}_3$. The double bond in $\text{CF}_2 = \text{CFC1}$ is polarized such that a partly negative charge is present on the carbon atom of the CFC1 group. This has been repeatedly confirmed by reactions of nucleophile additions to $\text{CF}_2 = \text{CFC1}$. In the final result only derivatives of fluoroacetic acid are produced. Thus, the condensation of formaldehyde with trifluoro chloroethylene could be expected to lead to α -fluoro- α -chloro hydracrylic acid: $\text{HOCH}_2^+ + \overset{\delta-}{\text{CFC1}} = \overset{\delta+}{\text{CF}_2} \longrightarrow [\text{HOCH}_2\overset{+}{\text{CFC1CF}_2}] \xrightarrow{\text{H}_2\text{O}} \text{HOCH}_2\text{CFC1COOH}$.

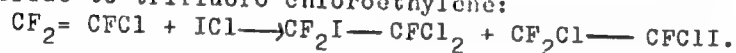
This acid has actually been isolated as its ethyl ester. The yield amounted to 19.8 % of the theoretical one. However, beside this yield, another 30.5 % of ethyl ester of α, α -difluoro hydracrylic acid have been produced. Its formation can be only explained as a result of the electrophile attack to the CF_2 group, i.e., to a negatively polarized carbon atom being more weak than is the case with the C atom in the CFC1 group of trifluoro chloroethylene. I. L. Knunyants, V. V. Shokina and Li Chih-yüan (Ref. 9: DAN, Card 3/5)

25481

S/020/61/139/001/013/018
B103/B226

Condensation of formaldehyde...

136, 611 (1961)) observed two types of orientation in the addition of iodine chloride to trifluoro chloroethylene:



It could not be found out whether this reaction is released by the ionic or by the radical mechanism. However, in the condensation with formaldehyde, an orientation being opposed to polarity appears in a pronounced ionic process, viz., that of the electrophile addition to the double bond. The authors try to explain this phenomenon by the competition of the polar and steric factors. The effective radius of F is 1.25 Å, that of Cl 1.58 Å. Thus, the orientation of reaction which corresponds to polarity meets a great steric hindrance. The steric and polar factors, however, agree as to their effect in the nucleophile addition to trifluoro chloroethylene. Due to this fact, orientation in these reactions has to be a rigorously unambiguous one. There are 9 references: 2 Soviet-bloc and 7 non-Soviet-bloc. The three references to English-language publications read as follows: M. S. Raasch. (Ref. 2: Am. pat. 2452791); D. D. Coffman et al. (Ref. 3: J. Org. Chem. 14, 747 (1949)); E. T. McBee et al. (Ref. 4: J. Am. Chem. Soc., 74, 444 (1952)).

Card 4/5

Condensation of formaldehyde...

25181
S/020/61/135/001/013/018
B103/B226

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute of Elemental-organic Compounds of the
Academy of Sciences USSR)

SUBMITTED: March 23, 1961

Card 5/5

KNUNYANTS, I.L.; GERMAN, L.S.; DYATKIN, B.L.

α -Bromoperfluoroisobutyric acid and its derivatives. Izv.
AN SSSR. Otd.khim.nauk no.8:1513-1514 Ag '61. (MIRA 14:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Isobutyric acid)

KNUNYANTS, I.L.; GERMAN, L.S.; DYATKIN, B.L.; MOCHALINA, Ye.P.

Condensation of 1,2-difluoro-1,2-dichloroethylene with formaldehyde.
Zhur.VKHO 6 no.1:114 '61. (MIRA 14:3)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Ethylene) (Formaldehyde)

DYATKIN, B.L.; MOCHALINA, Ye.P.; KNUNYANTS, I.L., akademik .

Condensation of formaldehyde with perfluorinated olefins:
tetrafluoroethylene, hexafluoropropylene, and trifluoroeth-
ylene. Dokl. AN SSSR 139 no.1:106-109 J1 '61. (MIRA 14:7)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Ethylene) (Formaldehyde)

KNUNYANTS, I.L.; DYATKIN, B.L.

Reaction of hexafluoroacetone with olefins. Izv. AN SSSR
Otd.khim.nauk no.2:355-356 F '62. (MIRA 15:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Acetone)
(Olefins)

39794

S/062/62/000/008/014/016
B101/B180

11.771↓
AUTHORS:

Knunyants, I. L., Dyatkin, B. L., and Mochalina, Ye. P.

TITLE:

Anionotropic rearrangement in reactions of perfluorobutadiene

PERIODICAL:

Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 8, 1962, 1483-1484

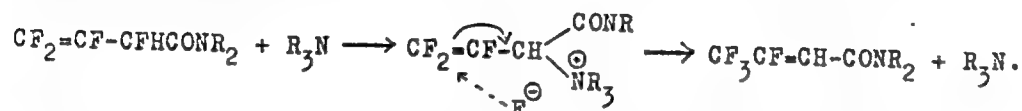
TEXT: The addition of nucleophilic reagents (e.g. alcohol) to hexafluorobutadiene-1,3 in the presence of triethylamine was investigated at 80°C. As oxidation of the addition compound with permanganate gives trifluoroacetic acid, while hydrolysis with H₂SO₄ gives trifluoroacetone, it is assumed that the primary addition occurs in the 1,2 position, and that the presence of the triethylamine causes an allyl rearrangement: $\text{CF}_2\text{-CF-CFHC}_2\text{OR} \rightarrow \text{CF}_3\text{CF-CHCF}_2\text{OR}$. This was proved in that the dialkylamides of α-hydroperfluorocrotonic acid (II) were obtained from the dialkylamides of α-hydroperfluorovinylacetic acid in the presence of triethylamine, as was the diethylamide of (II): b.p. 81-82°C/7 mm Hg; n_D^{20} 1.3983; d_4^{20} 1.2010. Oxidation of this product with KMnO₄ gave tri-

Card 1/2

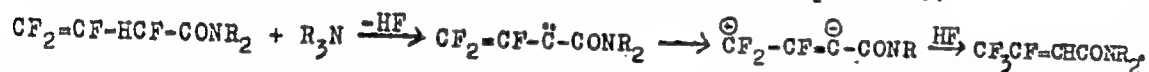
Anionotropic rearrangement in ...

S/G52/62/000/006/014/016
B101/B180

fluoroacetic acid in quantitative yield, and its hydrolysis with H_2SO_4 gave trifluoroacetone. Since neither anhydrous HF nor triethylaminefluorohydrate cause a rearrangement of the dialkylamine of (I) into the corresponding compound of (II), the triethylamine is assumed to have a specific effect:



The formation of a carben as an intermediate is also possible:



ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute of Elemental Organic Compounds of the
Academy of Sciences USSR)

SUBMITTED: February 19, 1962

Card 2/2

KNUNYANTS, I.L.; DYATKIN, B.L.; GERMAN, L.S.; MOCHALINA, Ye.P.

Condensation of formaldehyde with trifluoroethylene. Izv. AN SSSR. Otd.
khim. nauk no. 9:1674-1677 S '62. (MIRA 15:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.,
(Formaldehyde) (Ethylene) (Chlorine compounds)

KNUNYANTS, I. L.; FOKIN, A. V.; DYATKIN, B. L.; KOMAROV, V. A.

Action of nitrogen dioxide on perfluoroisobutylene. Zhur.
VKHO 8 no.2:239-240 '63. (MIRA 16:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

(Nitrogen oxides) (Propene)

KUDINYANTS, I.L.; DYATKIN, B.I.

Perfluoro tert-butyl alcohol and dissociation constants of
trifluoromethylcarbinols. Izv. AN SSSR, Ser. khim. nat. 5-161,
925 My '64. (KIRA 17)

1. Institut elementorganicheskikh soedineniy AN SSSR.

DYATKIN, B.L.; MOCHALINA, Ye.P.

Fluoroaliphatic diazo compounds. Report No.1: Some new
reactions of trifluorodiazethane. Izv. AN SSSR Ser. khim.
no.7:1225-1229 J1 '64. (MIRA 17:8)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

KNUNYANTS, I.L.; DYATKIN, B.L.; FOKIN, A.V.; KOMAROV, V.A.

Nitration of perfluoroisobutylene. Izv. AN SSSR. Ser. khim.
no.8:1425-1429 Ag '64. (MIRA 17:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

L-21735-65 EWT(m)/EPF(c)/EPR/EMP(j) Pc-L/Pr-L/Ps-L SSD(a)/RPL RM/WW

ACCESSION NR: AP4044703

S/0062/64/000/008/1425/1429

AUTHOR: Knunyants, I. L.; Dyatkin, B. L.; Fokin, A. V.; Komarov, V. A.

TITLE: Nitration of perfluoroisobutylene

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 8, 1964, 1425-1429

TOPIC TAGS: perfluoroisobutylene, nitration, nitrogen tetroxide reaction, nitroperfluorobutyl nitrite, perfluoroisobutyldinitrite, nitroperfluorobutanol, bistrifluoromethylglycolic acid

ABSTRACT: Perfluoroisobutylene was heated with an equimolecular amount of nitrogen tetroxide in an autoclave at 170-180C for 6-8 hours to attain nearly complete conversion. Nitroperfluoro-tert.-butyl nitrite (compound VI in the Enclosure), boiling 101-110C, and a fraction boiling 30-100C, apparently a mixture of perfluoroisobutyl- α, β -dinitrite, $(CF_3)_2C(ONO)CF_2ONO$, and its conversion products were obtained. Hydrolysis of the 30-100C fraction gave bistrifluoromethylglycolic acid, 27% yield based on initial perfluoroisobutylene. Nitroperfluoro-

L 21735-65

ACCESSION NR: AP4041703

tert-butanol (IX) was obtained in 23% yield, based on initial perfluoroisobutylene, /
analysis of VI. No dinitro compound $(CF_3)_2C(NO_2)CFNO_2$ nor nitronitrite
 CF_3ONO , nor products which could be obtained by their conversion
contrary to earlier data by I. L. Khudyants and A. V. Fakin
(AN SSSR 111, 1035 (1956)). Orig. art. has: 7 equations and 10 formulae

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
Institute of Organometallic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 28Dec62

ENCL: 01

SUB CODE: GC, MT

NO REF SOV: 005

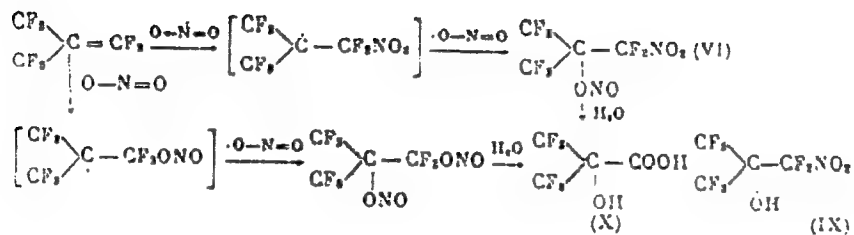
OTHER: 004

2, 3

L 21735-65

ACCESSION NR: AP4044703

ENCLOSURE: 01



Card 3/3

MOCHALINA, Ye.P.; DYATKIN, B.L.

' Synthesis of 2-diazoperfluoropropane (bistrifluoromethyldiazomethane. Izv. AN SSSR. Ser. khim. no.5:926-928 '65. (MIRA 18:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

DYATKIN, B.L.; MOCHALINA, Ye.P.

Fluoroaliphatic diazo compounds. Report No.2: α -Diazoperfluoro ketones. Izv. AN SSSR. Ser. khim. no.6:1035-1039 '65.

(MIRA 18:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

DYATKIN, B.I.; BEKKER, R.A.; FROSTMAN, I.I.

Nitrosation of alkyl perfluorovinyl ethers. Izv. AN SSSR. Ser.
Khim. no.6:1121 '65. (Zhita 18:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

GEVORKYAN, A.A.; DYATKIN, B.L.; KNUNYANTS, I.L.

Action of phosphorous acid esters on α -chloroperfluoronitroso
alkanes. Izv. AN SSSR. Ser. khim. no.9:1599-1606 '65.
(MIRA 18:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

DYATKIN, B.L.; MOCHALINA, Ye.P.; KNUNYANTS, I.L.

Oxidation of hexafluoroacetone oxime in anhydrous hydrogen fluoride. Izv. AN SSSR. Ser. khim. no.9:1715-1716 '65.
(MIRA 18:9)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

DYATKIN, P.L.; GEV RYAN, A.A.; KRETYANS, I.L.

Substitution of nitroso group in perfluorinated alkanes.
Izv. AN SSSR Ser. Khim. n. 10:1873-1875 1975.

(MIRA 18:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

DYATKIN, B.L.; MOCHALINA, Ye.P.; LANTSEVA, I.T.; KNUNYANTS, I.L.

Hexafluoroisobutyric acid in the Borodin-Hunsdiecker reaction.
Zhur.VKHO 10 no.4:469-470 '65.

(MIRA 18:11)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

KNUNYANTS, I.I.; BYKHOVSKAYA, E.G.; DYATKIN, B.L.; FROSIN, V.N.;
GEVORKYAN, A.A.

Interaction of trifluoronitroisomethane and tert-perfluoro-
nitroisobutane with acid phosphites. Zhur.VKHO 10 no.4:472-
473 '65. (MIRA 18:11)

GEVORKYAN, A.A.; DYATKIN, B.L.; KNUFYANTS, I.I.

Certain reactions of tert-nitrosoperfluoroisobutane. Zhur. VKHO
10 no. 6:707-708 '65 (MIRA 19:1)

1. Institut elementoorganicheskikh soedineniy AN SSSR. Submitted July 22, 1965.

DIATKIN, B.L.; BEKKER, R.A.; KUNYANTS, I.L., akademik

Reaction of alkylperfluorovinyl ethers with nitrogen dioxide.
Esters of nitrofluorocarboxylic acids. Dokl. AN SSSR 166
no.1:106-109 Ja '66. (MIRA 19:1)

1. Institut elementoorganicheskikh soedineniy AN SSSR. Submitted July 9, 1965.

KNUCHANTS, I.L.; SYATKIN, B.L.; MOCHALINA, Ye.P.; LANTSEVA, L.T.

Hexafluoroisopropylhydroxylamine and the dissociation constants
of some fluorinated hydroxylamines and oximes. Izv. AN SSSR. Ser.
khim. no.1:179-180 '66. (MIRA 19:1)

I. Institut elementoorganicheskikh soedineniy AN SSSR. Submitted
May 26, 1965.

L 31885-66 EWT(m)/ENP(j)/T WW/JW/JWD/RM

ACC NR: AP6012539

SOURCE CODE: UR/0062/66/000/003/0585/0585

AUTHOR: Dyatkin, B. L.; Mochalina, Ye. P.; Bekker, R. A.; Knunyants, I. L. 44
43
6

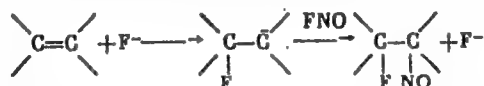
ORG: Institute of Elemental Organic Compounds, Academy of Sciences SSSR (Institut elementarnoorganicheskikh soyedineniy Akademii nauk SSSR)

TITLE: Mechanism of addition of nitrosyl fluoride to fluoroolefins

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 585

TOPIC TAGS: organic synthesis, fluorine compound

ABSTRACT: The authors obtained experimental proof of the nucleophilic mechanism of addition of FNO to higher fluoroolefins. It was shown that alkali metal fluorides (especially in strongly ionizing media) are effective catalysts of this reaction



Perfluoroethylene reacts with FNO only at 120-150°C and the reaction of perfluoroethylene (15 g), FNO (5.5 g), CsF (2 g) and KF (4 g) produces 2-nitrosoperfluoropro-

Card 1/2

UDC: 541.124 + 546.16

L 31885-66

ACC NR: AP6012539

pane (14.3 g). Perfluorocyclobutene according to our observations does not react with FNO even during heating to 120°C; however, shaking of 8 g of perfluorocyclobutene, 4.5 g of FNO, 1 g CSF and 2 kg KF with 5 ml of tetramethylene sulfone at 35° for 3 hrs produces nitrosoperfluorocyclobutane with 70% yield.

SUB CODE: 07/ SUBM DATE: 30Dec65/ ORIG REF: 1002/ OTH REF: 001

LS

Card 2/2

ACC NR: AP/000738 EWT(m)/EWP(j) JW/RM

SOURCE CODE: UR/0062/66/000/006/1124/1124

KNUNYANIS, I. L., DYATKIN, B. L., BEKKER, R. A., Institute of Heteroorganic Compounds, Academy of Sciences USSR (Institut elementoorganicheskikh soedineniy AN SSSR)

"New Method of Synthesizing Alpha-Difluoroaminoperfluorocarboxylic Acids and Their Derivatives"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, 1966, p 1124

Abstract: A new method of synthesizing alpha-difluoroaminoperfluorocarboxylic acids and their derivatives on the basis of readily available alkylperfluorovinyl ethers and tetrafluorohydrazine was discovered. The alkylperfluorovinyl ether was treated with tetrafluorohydrazine, the adduct then treated with antimony pentafluoride, and the $\text{RCF}(\text{NF}_2)\text{COF}$ formed quantitatively converted to esters of alphasdifluoroaminoperfluoropropionic acid by treatment with alcohols. Orig. art. has: 2 formulas. [JPRS: 37,023]

TOPIC TAGS: organic synthetic process, fluorocarboxylic acid, ether, vinyl compound hydrazine, nonmetallic organic derivative

SUB CODE: 07 / SUBM DATE: 07Apr66 / OTH REF: 001

Card 1/1 vmb

UDC: 542.91 + 547.466 + 546.16

0923 1907

ACC NR: AP6032590

SOURCE CODE: UR/0062/66/000/008/1377/1382

AUTHOR: Knunyants, I. L.; Dyatkin, B. L.; Govorkyan, A. A.

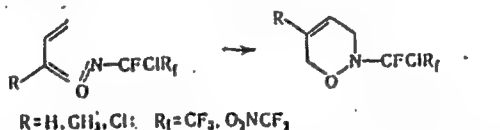
ORG: Institute of Organometallic Compounds, Academy of Sciences, SSSR (Institut olomentoorganicheskikh soyedinoniy Akademii nauk SSSR)

TITLE: Reactions of α -chloroperfluoronitrosoalkanes with unsaturated compounds

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 8, 1966, 1377-1382

TOPIC TAGS: organic nitroso compound, fluorinated organic compound

ABSTRACT: The reactions of diene hydrocarbons and olefins (isobutylene and propylene) with two α -chloroperfluoronitrosoalkanes, α -chloroperfluoronitrosoethane CF_3CFCINO (I) and α -chloro- β -nitroperfluoronitrosoethane $\text{O}_2\text{NCF}_2\text{CFCINO}$ (II), are described. (I) and (II) reacted very readily in ether solution at -20 to -15°C with butadiene, isoprene and chloroprene. The main direction of the reaction is a diene-synthesis-type addition forming derivatives of 3,6-dihydro-1,2-oxazine:



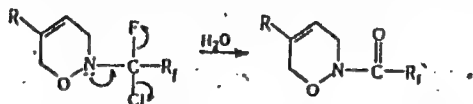
These compounds are unstable and darken rapidly at room temperature. They readily

Card 1/3

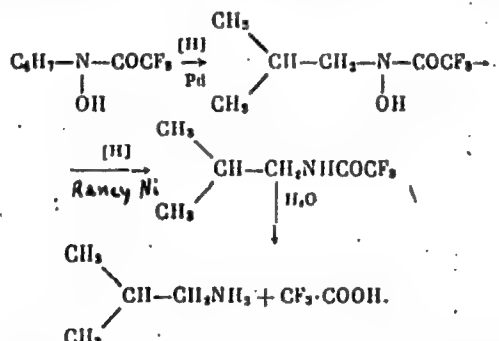
UDC: 542.91+547.231+661.723-16

ACC NR: AP6032590

hydrolyze to the corresponding stable perfluoroacetyl derivatives



(I) and (II) also react very readily with isobutylene and propylene. Alkenyltrifluoroacetohydroxamic acid obtained from (I) and isobutylene was made to undergo the following reactions:



It is shown that the reactions of α -chloroperfluoronitrosoalkanes with isobutylene and propylene lead to the corresponding oxazethidines, whose hydrolysis yields N-(methal-

Card 2/3

ACC NR: AP6032590

lyl)perfluorohydroxamic and N-(allyl)perfluorohydroxamic acid Orig. art. has: 2
figuros.

SUB CODE: 07/ SUBM DATE: 11Mar64/ ORIG REF: 007/ OTH REF: 006

Card 3/3

ACC NR: AP7004582

SOURCE CODE: UR/0020/66/168/006/1319/1322

AUTHOR: Dyatkin, B. L.; Bakker, R. A.; Knunyants, I. L. (Academician)

ORG: Institute of Heteroorganic Compounds, AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR)

TITLE: Interaction of nitryl fluoride with alkylperfluorovinyl ethers. | Synthesis of esters of alpha-nitroperfluorocarboxylic acids

SOURCE: AN SSSR. Doklady, v. 168, no. 6, 1966, 1319-1322

TOPIC TAGS: fluorinated organic compound, vinyl compound, ether

ABSTRACT: Two alternative reaction schemes are described for the reaction of alkylperfluorovinyl ethers with nitryl fluoride: addition of FNO_2 at the double bond according to the polarity of the reagents (scheme 1), and production of alkoxyperfluoronitrosoalkanes (scheme 2). Alkyltri-fluorovinyl ethers react chiefly according to scheme 2, the formed nitroso-compound reacting with excess vinyl ether to oxazetidines. Alkyl-beta-chlorodifluorovinyl ethers and alkylperfluoropropenyl ethers react chiefly according to scheme 1. Ethylperfluoroisobutenyl ether reacts with nitryl fluoride in a stainless steel autoclave, yielding only a nitroso-ether; in an autoclave entirely lined with teflon, nitrofluorination accompanies the formation of the nitroso-compound. The reactions of nitryl chloride with alkylperfluorovinyl ethers were compared with those of nitryl fluoride. Nitryl chloride was found to behave similar to nitryl fluoride with respect to alkyltrifluorovinyl ethers; with alkyl-beta-chlorodifluoro-vinyl and alkylperfluoropropenyl ethers, exclusively chlorination products were obtained. Alkoxyperfluoronitroalkanes were also produced by oxidation

Card 1/2

UDC: 547.26'221.222.231.232

ACC NR: AP7004582

of the corresponding alkoxyperfluoronitrosoalkanes with nitrogen dioxide. Alkoxyperfluoronitrosoalkanes were readily converted to esters of alpha-nitroperfluorocarboxylic acids by reaction with anhydrous aluminum chloride, followed by treatment with ethanol. Esters of alpha-nitroperfluoropropionic acid were also formed by oxidation of esters of alpha-nitrosoperfluoropropionic acid by nitrogen dioxide. Properties of the ethyl ester of alpha-nitroperfluoropropionic acid were studied; it reacts with hydrogen chloride, yielding alpha-chloroper-fluoronitrosoethane; under the action of ammonia, it decomposes to alpha-hydroperfluoronitroethane and ethyl carbamate. Orig. art. has: 2 formulas and 1 table. [JPRS: 38,967]

SUB CODE: 07 / SUB DATE: 02Dec65 / ORIG REF: 010 / OTH REF: 003

Card 2/2

ACC NR: AP7010719

SOURCE CODE: UR/0062/66/000/012/2247/2248

AUTHOR: Mochalina, Ye. P.; Dyatkin, B. L.; Knunyants, I. L.

ORG: Institute of heteroorganic compounds, Academy of Sciences USSR
(Institut elementoorganicheskikh soyediniy AN SSSR)

TITLE: Fluorine-containing phosphazo-compounds

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 12, 1966, 2247-2248

TOPIC TAGS: organic nitrogen compound, organic phosphorus compound,
fluorinated organic compound

SUB CODE: 07

ABSTRACT: It was found that fluorine-containing phosphazo-compounds may be prepared by reaction triphenylphosphine and triethylphosphite with tertiary perfluoronitrosoalkanes, in 75 and 68% yield, respectively. The reaction products were characterized. The first case of the formation of phosphazo compounds from perfluoronitrosoalkanes and derivatives of trivalent phosphorus was reported in 1965 at the laboratory of the authors. Orig. art. has: 2 formulas. [JPRS: 40,351]

Card 1/1

INDIC: 567.221 + 661 710 1

ACC NR: APO625994

SOURCE CODE: UR/0072/66/036/007/1326/1330

AUTHOR: Dyatkin, B. L.; Gevorkyan, A. A.; Khunyants, I. L.

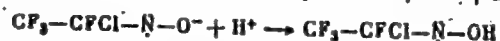
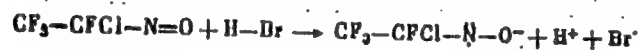
ORG: none

TITLE: Derivatives of trifluoroacetohydroxamic acid

SOURCE: Zhurnal obshchey khimii, v. 36. no. 7, 1966, 1326-1330

TOPIC TAGS: trifluoroacetohydroxamic acid derivative, chlorination, bromination, FLUORINE COMPOUND, ACETAL, ORGANIC NITROSO COMPOUND, HALIDE, AMIDE

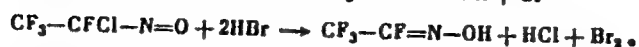
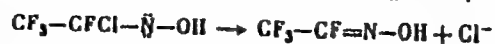
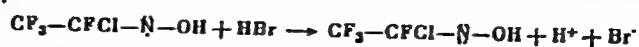
ABSTRACT: Hydrogenation of $\text{CF}_3\text{CF}_2\text{NO}_2$ over palladium black in absolute ether at an initial pressure of 120 atm gave $\text{CF}_3\text{CF:NOH}$ (bp $30-31^\circ\text{C}$, n_D^{20} 1.3230, d_{20} 1.1520), which was chlorinated at -40°C in tetrachloroethane in the presence of pyridine to form (92%) $\text{CF}_3\text{CFCIN:O}$. The latter was mixed with phenol and ethyl ether at -78°C and then brominated with HBr at -30°C to form $\text{CF}_3\text{CF:NOH}$, which was identified as $\text{CF}_3\text{CF:NOH} \cdot 0.5(\text{C}_2\text{H}_5)_2\text{O}$ (bp $78-80^\circ\text{C}$, n_D^{20} 1.3245, d_{20} 1.1200):



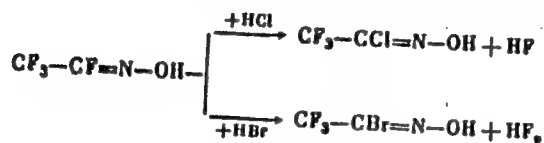
Card 1/3

UDC: 547.413.5

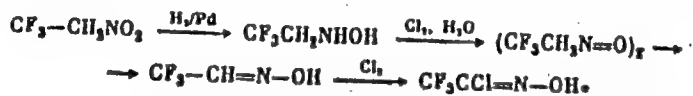
ACC NR: AP6025994



In this reaction, F may be substituted either by Cl (which is formed during the reaction) or by Br, when the reaction is conducted with an excess of HBr, to form $\text{CF}_3\text{CCl:NOH}$, identified as $\text{CF}_3\text{CCl:NOH} \cdot 0.5(\text{C}_2\text{H}_5)_2\text{O}$ (bp 48°C , n_D^{20} 1.3610, d_4^{20} 1.2440) and $\text{CF}_3\text{CBr:NOH}$, identified as $\text{CF}_3\text{CBr:NOH} \cdot 0.5(\text{C}_2\text{H}_5)_2\text{O}$ (bp $60-61^\circ\text{C}$, n_D^{20} 1.3870, d_4^{20} 1.5170):



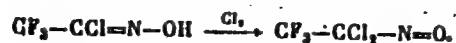
Chlorination of an aqueous solution of $\text{CF}_3\text{CH}_2\text{NHOH}$ yielded a blue nitroso compound which dimerized to $(\text{CF}_3\text{CH}_2\text{NO})_2$, mp $82.5-83.5^\circ\text{C}$; this when chlorinated at -20°C in HCl yielded (55%) $\text{CF}_3\text{CCl:NOH}$, bp $98-102^\circ\text{C}$, n_D^{20} 1.3610.



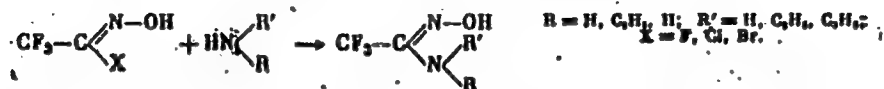
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ACC NR:AP6025994

$\text{CF}_3\text{CCl}_2\text{NOH}$ in mixtures with pyridine and Cl (mixed at -40°C) on warming to room temperature yielded $\text{CF}_3\text{CCl}_2\text{N}=\text{O}$, bp 36°C , n_D^{20} 1.3350, d_4^{20} 1.5020.



The above trifluoroacetoxyhydroxamic acid halides react with NH_3 and amines to form the corresponding amides:



By this reaction, $\text{CF}_3\text{C}(\text{:NOH})\text{NH}_2$, bp 62°C , n_D^{20} 1.3950, d_4^{20} 1.5640; $\text{C}_6\text{H}_5\text{C}(\text{:NOH})\text{NH}_2$, bp $57-58^\circ\text{C}$, n_D^{20} 1.4149, d_4^{20} 1.1960; and the anilide $\text{C}_6\text{H}_5\text{C}(\text{:NOH})\text{NH}_2$, mp $70.5-71.5^\circ\text{C}$, bp $98-100^\circ\text{C}$ were obtained.

[PS]

[WA-50; CBE No. 14]

SUB CODE: 07/ SUBM DATE: 16Jun65/ ORIG REF: 005/ OTH REF: 002

Card 3/3

ACC NR: AP0032278

SOURCE CODE: UR/0020/66/170/002/0337/0339

AUTHOR: Knunyants, I. L. (Academician); Dyatkin, B. L.; Bekker, R. A.

ORG: Institute of Heteroorganic Chemistry, Academy of Sciences, SSSR (Institut elementoorganicheskoy khimii Akademii nauk SSSR)

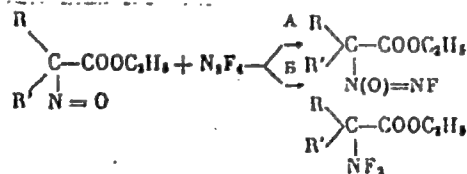
TITLE: Reactions of tetrafluorohydrazine with alpha-nitrosoperfluorocarboxylic acid esters

SOURCE: AN SSSR. Doklady, v. 170, no. 2, 1966, 337-339

TOPIC TAGS: tetrafluorohydrazine reaction, nitrosoperfluorocarboxylic acid ester, ester, chemical reaction, organic nitroso compound, hydrazine compound, fluorohydrin, carboxylic acid

ABSTRACT: In an autoclave at 70-80°C, N_2F_4 reacts with ethyl esters of nitrosodifluoroacetic acid, nitrosochloroacetic acid, and alpha-nitrosoperfluoropropionic acid according to the reaction

A:



1) $\text{R}=\text{R}'=\text{F}$,

3) $\text{R}=\text{F}$, $\text{R}'=\text{CF}_3$,

2) $\text{R}=\text{F}$, $\text{R}'=\text{Cl}$,

4) $\text{R}=\text{R}'=\text{CF}_3$.

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UDC: 547.221.231.235

ACC NR: AP6032278

to form the corresponding esters shown in the table.

[WA-50; CBE No. 12]

Table 1.

Compound	yield, %	bp	n_D^{20}	d_4^{20}	MRD		found, %				calculated, %			
					found	calculated	O	H	F	N	C	H	F	N
$CF_3-COOC_2H_5$	32	50/30	1.3635	1.3755	30.77	30.11	26.16	2.63	31.29	14.88	23.81	2.71	30.63	15.05
$N(O)=NF$														
$CFCI-COOC_2H_5$	21	54/12	1.4083	1.4061	35.50	35.58	23.65	2.53	19.14	13.75	23.72	2.49	18.81	13.5
$N(O)=NF$														
$CF_3CF-COOC_2H_5$	35	81/33	1.3510	1.4351	35.67	34.18	25.55	2.09	40.17	11.85	25.43	2.13	40.24	11.8
$N(O)=NF$														
$CF_3-C-COOC_2H_5$ CF_3	45	50/20	1.3490	1.5042	40.57	40.81	25.50	1.88	47.12	0.82	25.18	1.76	46.48	9.1
$N(O)=NF$														
$CF_3-C-COOC_2H_5$ CF_3	51	65/100	1.3230	1.4868	37.03	37.10	26.20	1.87	55.31	5.23	20.19	1.83	55.25	5.0
NF_3														

SUB CODE: 07/ SUBM DATE: 10Mar66/ ORIG REF: 006/ OTH REF: 004/

Cord 2/2

100 AND 8TH CROSS

1ST AND 2ND CROSS

PROCESSES AND PROPERTIES MECH

25

DIATKIN, M. E.

Biradicals. (In Russian.) M. E. Diatkin and Ia. K. Syrkin. *Priekhi Khimii* (Progress in Chemistry), v. 16, no. 1, 1947, p. 29-68.

The possibility of the existence of biradicals, tri-radicals, etc. (that is, the presence of two or more trivalent carbon atoms in one molecule) was investigated by means of a thorough study, using both chemical and magnetic methods on a series of organic compounds. A new theory of biradical compounds is advanced. 61 ref.

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

100 AND 8TH CROSS

1ST AND 2ND CROSS

PROCESSES AND PROPERTIES MECH

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>Handwritten: 41</i></p> <p><i>Handwritten: K</i></p> <p>Ionic character and dipole moments of bonds. M. E. Distkina (Izv. Akad. Nauk SSSR, 1940, 12, 639-646). On the basis of Wall's theory (A., 1940, 1, 244) dipole moments of the "transition" structures are calc. for a no. of compounds, and a physical interpretation of these structures is offered. Calculation of the wts. of the various structures offered for the NH_3 ion shows that the Kussel structure ($\text{N}^+ \text{H}^+ \text{H}^- \text{H}^-$) is insignificant, whilst the transition structures are of great importance. The dipole moment of homopolar structures is very small and may be ignored. F. L. U.</p>																			
Sci. Res. Physico-Chemical Inst. im L. Ya. Karpov																			
<p>ASA 11A METALLURGICAL LITERATURE CLASSIFICATION</p> <p>110000-110000</p> <p>110000-110000</p> <p>110000-110000</p>																			

117 AND 119 (1941)

PROCESSED AND PROPERTIES INDEX

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Resonance in organic chemistry. Ya. K. Syrkin, M. R. Dyatkina and A. A. Zhukhovitski. *Uspekhi Khim.* 10, 121-57 (1941), and Correlation, *Ibid.* 750. - Review. Resonance and valence states of the individual atoms are discussed. The resonance structures of hydrocarbons and their derivatives, orientation in the benzene and naphthalene rings, inductive effect and alternating polarity are considered. Classical structures do not indicate the full possibilities of the reactions of org. compds. These can be found only by considering all possible polar as well as ionic structures, also the possibilities of hydrogen bonds, chelation, steric hindrance and valence strains. In considering the various resonance states the relative probability and the energy relations must be taken into account. In the case of reactions the thermodynamic and the kinetic factors must be distinguished, especially in the case of competitive reactions. A reinterpretation of Ingold's ideas completely in terms of quantum mechanics should lead to fruitful results. F. H. Rathmann

ASAC-SLA DETALLURGICAL LITERATURE CLASSIFICATION

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The structure of the naphthalene molecule. Ya. K. Syrkin and M. E. Dyatkina, *Acta Physicochim. P. R. S. S. U.*, 14, 105-18(1941)(in English).--Theoretical. The nos. of structures for given groups and their relative wts. are tabulated and from their consideration conclusions are drawn as to the relative reactivities of benzene, naphthalene, anthracene and more highly condensed ring systems.
P. H. Rathmann

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

100 AND 200 CIPHER
100 AND 200 CIPHER

100 AND 200 CIPHER
100 AND 200 CIPHER

PROCESSING AND PROPERTY INDEX

COMMON ELEMENTS

COMMON VARIABLES INDEX

CA

2

Inductive effect. Ya. K. Syrkin and M. B. Dynskina. *Acta Physicochim. U. R. S. S.* 14, 185-92 (1941).—The effect of substituents on the distribution of charges in org. compds. is treated as an effect of resonance with stabilized ionic structures. A quant. examn. of the energies of such structures is made for NPhMe, ion and PhCl, and the directing influence of these substituents is shown to follow from the assumptions made. PhSO₂H, toluene and Ph-NO₂ are also discussed.

B. C. P. A.

COMMON ELEMENTS

COMMON VARIABLES INDEX

CA

2

Inductive effect. Ya. K. Syrkin and M. B. Dynskina. *Acta Physicochim. U. R. S. S.* 14, 185-92 (1941).—The effect of substituents on the distribution of charges in org. compds. is treated as an effect of resonance with stabilized ionic structures. A quant. examn. of the energies of such structures is made for NPhMe, ion and PhCl, and the directing influence of these substituents is shown to follow from the assumptions made. PhSO₂H, toluene and Ph-NO₂ are also discussed.

B. C. P. A.

100 AND 200 CIPHER
100 AND 200 CIPHER

CA

2

Structure of boron hydrides. Ya. K. Syrkin and M. E. Dyatkina. *Acta Physicochim. U. R. S. S. 14, 347* (1947). The proposed structure for B₁₀H₁₂ contains a B⁺ ion bonded with 4 H atoms and a B⁻ ion bonded with 2 H atoms; in the actual mol. resonance occurs between this and a corresponding structure with the signs reversed. Somewhat similar structures are suggested for the remaining hydrides; all of them contain trivalent B⁺ and quadrivalent B⁻ ions. B. C. P. A.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

The ionic character of bonds and the polarity of molecules. II. M. B. Dyatkina. *J. Phys. Chem.* (U. S. S. R.) 15, 507-74 (1941); *cf. C. A.* 36, 2188. — In continuation of the earlier work, the relative weights (importance) for the three bond types were calcd. (for the halogen acids). The importance of the homopolar link rises in the series F, Cl, Br, I; the so-called transition structure is generally of greater weight than the ionic structure. Pauling (*The Nature of the Chemical Bond*) obtained different values for the weight of the ionic structure because of over-simplified calcs. and because of ignoring the moment of the transition structure. Calcs. for the C-halogen bond, shows a somewhat higher weight of the ionic structure and lower, and more const., weight of the transition structure for the halogen series. Calcs. of the structure weights were also made for: O-Me, N-Me, MeOH, MeO, MeNH, MeNH and MeN. For the O compounds, there is a uniformly high weight of the transition form which substan-

tially exceeds the ionic form; for these compounds the transition structures cannot be ignored. Calculations for the HCl bond and for H₂S were also made. Compounds, particularly those with multiple bonds, are discussed mathematically. Although the calculation is an approximation, it is possible to assert that in propylene the ionic bond is negligible, as well as the transition form; but the small weight of these forms conditions the polarity of this molecule, addition of H halide, etc. Analysis of halogenated acetylenes shows that the transition forms have greater weight than do the ionic forms; in this resonance the structures with a positive halogen atom are unimportant and the great lowering of the moment caused by them is due to the great polarity of these moieties, because of large atomic distances between the positive and negative charges. G. M. Kirovskii

G. M. Kirovskii

ASBILA METALLURGICAL LITERATURE CLASSIFICATION

CIA-RDP86-00513R000411720013-2"

[illegible]

Structure of boron hydrides. M. P. Dzhukina and J. J. (Compt. rend. Acad. Sci. U.R.S.S., 1912, 35, 180-183) diffraction intensity curves of B_2H_6 , calc. for the author (A., 1911, 1, 401), compared with Bauer's data (A., 193, agree as well as do those given by Bauer's C_{2H_6} -like model for mol. dimensions 1.80 ± 0.04 , 1.23 ± 0.03 , and 1.33 ± 0.03 Å for B-B, B-H_{int}, and B-H_{ext}, and the angles $123 \pm 8^\circ$ and $93 \pm 5^\circ$ for $HBDH_{int}$ and $HBDH_{ext}$, respectively. L. J. J.

DIATKINA, M. Ye.; SYRKIN, Ya. K.

Physico-Chemical Institute imeni L. Ya. Karlov, Moscow (-1941-)

"On the Question Concerning the Structure of Boranes"
II Zaur. Fiz. Khim., Vol. 17, No. 1, 1943

BR-52059019

10

REMARKS ON THE PAPER "Application of resonance to organic chemistry" by V. I. Ust'mtsev. Ya. K. Syrkin, M. R. Dynkina, and A. A. Zhukhovitskii. *Uspekhi Khim.* 13, 80-1 (1944); cf. C.A. 35, 7779; 38, 722¹¹.
Poleical. F. H. Rathmann

Structure of complex compounds. I. J. Sirkin and M. Dvorkina (U.S.S.R. *Physicochem. U.R.S.S.*, 1948, **20**, 137-160).—The energy levels of atoms with d electrons are compared for states with equal no. of unpaired electrons distributed in different ways over the d and s orbitals. In the elements Sc—Ni, the transition of one of the two paired s electrons into the d orbital decreases with increasing at no. to 0.6 kg.-cal. in the case of Ni. It is concluded from a discussion of the possibilities of unpairing of electrons in d , s , and p orbitals that the max. no. of electrons (n) which may participate in valency bonds is 9 ($5d + 4s + 3p$). For V, Cr, Mn, Fe, Co, and Ni, n is 6, 6, 7, 8, 9, and 9, respectively. The existence of these high valency states is supported by magnetic moments of Cr, Mn, Mn, Fe, Os, Co, Ni, Pt, Cu, and Au compounds. Structural formulae for metal carbonyls, nitrosyls, and NO_2 -compounds are proposed.

TEST AND INS. CODES										PROCESSING AND PROPERTIES INDEX										TEST AND INS. CODES									
<p>6</p> <p>The structure of complex compounds. II. Ya. K. Sytkin and M. B. Dyatkina. <i>Ada Physicochim. U.R.S.S.</i> 20, 273-90(1945); cf. <i>C.A.</i> 40, 259.—A consideration of the structure of the complex cyanides of K and Cr, Mn, Cu, Fe, Ni, Mn, and Pt, also several inner complex salts and halogens. Diagrams of the various proposed structures are given. The suggested structures are based on concepts developed in Part I. Elmer F. Stephan</p>																													
<p>ASSOCIATE METALLURGICAL LITERATURE CLASSIFICATION</p>																													
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CA
137 AND 138 SERIES

PROCEDURE AND PROPERTY INDEX

2

Formation of hybrid bond orbitals with unshared electron pairs and the structure of TeCl_4 . M. Dyatkina (Karpov Inst. Phys. Chem., Moscow). *Acta Physico-chem. U.R.S.S.* 20, 407-10(1945).—Formation of 4 covalent bonds with symmetry C_{2v} as in TeCl_4 , $(\text{C}_6\text{H}_5)_2\text{SeCl}_2$, and $(\text{C}_6\text{H}_5)_2\text{SbBr}_2$ may occur in electron configurations p^4 , d^4sp , d^4p^2 , and d^4 and eliminates the assumption of formation of hybrid bond orbitals with unshared electron pairs in these compounds. H. S. van Kloooster

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Common Valence States

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Interatomic distances and ionic character of bonds. M. Dyatkina (Karpov Inst. Phys. Chem., Moscow). *Acta Physicochim. U.R.S.S.* 20, 683-94 (1945). Tables are given of bond distances for halides and methods of 20 elements. Subtracting the covalent radius of C or N (halogen) from the observed distance in MX_n or MX , gives the apparent covalent radius r_a for element M. For elements of groups 4, 5, and 6 of the periodic table, r_a is smaller for the halides than for the methides and decreases with decreasing at. wt. of the halogen. This shows that the distance decreases with increasing ionic character of the bond. For elements of groups 2 and 3, and for halides of Sn and Pb, r_a is again smaller for halides than for methides, but increases with decreasing at. wt. of the halogen. This is due to the possibility of electron attachment into free orbitals of M, which allows contribution of structures $M^+ \cdot X^-$, this contribution being greater the smaller the electronegativity of the halogen. A. O. Allen

ca

PROCESSES AND PROPERTIES INDEX

Biradical state of hydrocarbons. M. E. Dyatkina and Ya. K. Syrkin. *Bull. acad. sci. U.R.S.S., Chem. ser.* 1945, 513-55 (in English, 650); *Acta Physicochim. U.R.S.S.* 21, 23-40 (1946). - The energies of excitation from the singlet to the triplet (biradical) state were calculated for 89 hydrocarbons by the mol. orbital method. The numerical results are expressed by the resonance interval β between 2 neighboring C atoms. The biradical triplet form is present in equil. when the energy of excitation is lower than 0.1 β . For polyenes low energies are attained only when the no. of conjugated bonds is very large, i.e. 30 or more. Phenylpolyenes have rather high excitation energies, e.g. 0.26 β for tetraphenyldecapentaene. The quinodimethanes have low energies of excitation. As the no. of rings grows from di-, to tri-, to tetrabenzquinodimethane the energy decreases from 0.27 β , to 0.13 β , to 0.07 β . Various groups can be arranged in the order of their effect on decreasing the energy of excitation: Ph < vinyl < biphenyl < p-vinylphenyl < phenylvinyl < diphenylvinyl < anthryl < anthrylvinylyl. For quinodimethanes with a large no. of rings, or contg. strongly "decreasing" substituents, the energy of excitation is as low as 0.03-0.04 β , i.e. it has a value of the order RT. Low values for the energy of excitation may be expected for derivs. of naphtho-, anthra-, and phenanthrenoquinodimethanes when only one localization of unstrained bonds is to be expected for the original quinodimethane, such as 2,6-naphthoquinodimethane. The energy of excitation decreases more rapidly in the case of linear annulation than for angular annulation. Oscar W. Bauer

10

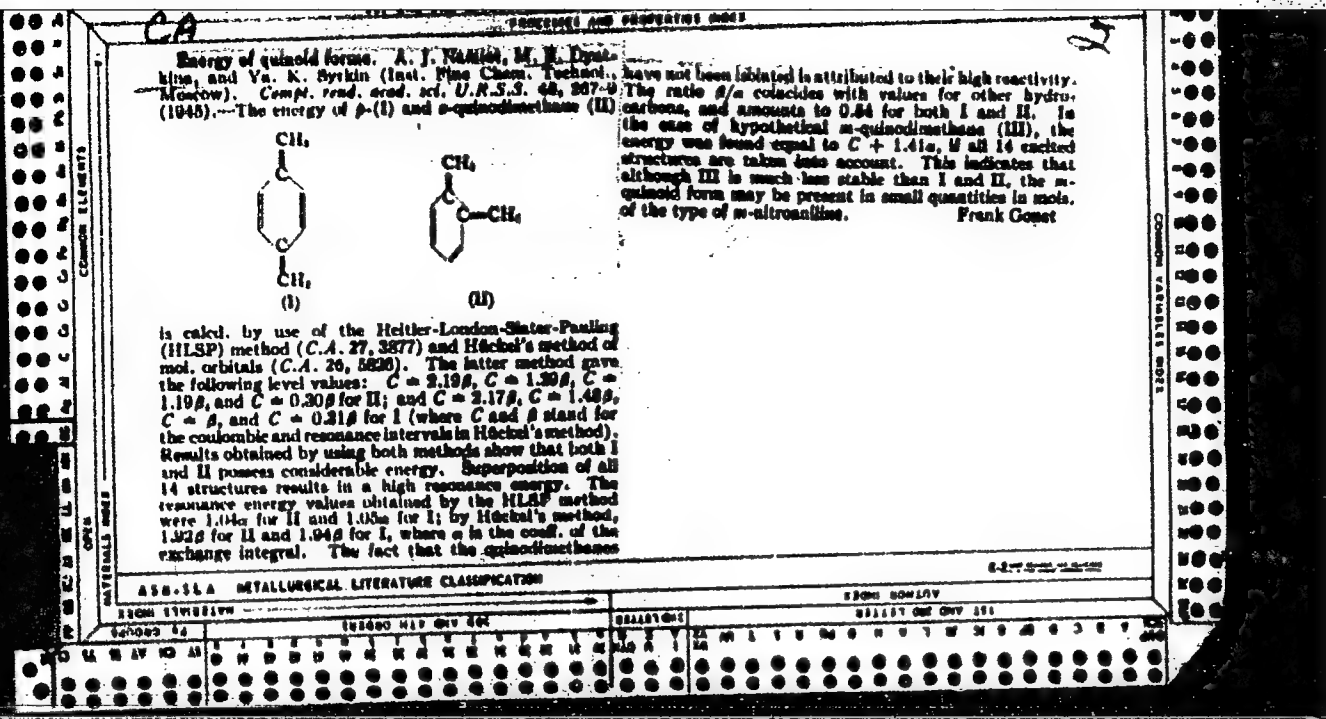
ASU-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SYMBOLIC
SCHEMATIC ONLY ONE

SYMBOLIC
ONLY ONE

ALPHABETICALLY BY SUBJECTS

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z



1ST AND 2ND COVER

PROCESSING AND PROPERTIES INDEX

140 AND 170 COVER

2

Covalent justification of Pauling's electrostatic valence rule. *M. Dyatkina* (Karpov Inst. Phys. Chem., Moscow). *Acta Physicochim. U.R.S.S.* 21, 377 8(1940) (in English). —The possible use of Pauling's electrostatic valence rule (for crystal structure) as an indication of the ionic character of the bonds is discussed. R. A. V. N.

ASM S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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PA 54T36

USSR/Chemistry - Quinones
Chemistry - Resonance, Energies

Sep/Oct 1946

"The Reduction Potentials of Quinones and Resonance Energy," M. Dyatkina, Ya. Syrkin, Karpov Inst Phys Chem, Moscow, 22 pp

"Acta Physicochimica URSS" Vol XXI, No 5

Reduction potentials of quinones are correlated with changes in resonance energy on passing over from the quinone to corresponding hydroquinone. Parallelism found between changes in resonance energy and reduction potentials. Data on resonance energy allow value to be predicted for potentials of uninvestigated quinones. Received, 15 Oct 1945.

54T36

Resonance energies of polynuclear hydrocarbons. J. R. Sirlin

and M. E. Diakina (Bull. Acad. Sci. U.R.S.S. Chem. 1946, 163-178).

New results of calculations by the mol. orbital method of the resonance energies of 70 hydrocarbons and free radicals, of supposedly planar configuration, are given in terms of β (17.5 kcal.), a resonance integral of two adjacent C atoms. From these data and those of Hückel and others certain rules governing changes of resonance energy within structural series, in isomerisation, and in addition reactions are enunciated, and miscellaneous topics, e.g., dissociation into free radicals, are discussed. (a) Linear (acene) and angular (phen) polynuclear hydrocarbons. Phenols have higher resonance energies than acenes with the same no. of benzene nuclei (cf. excitation energies to the triplet state, which are greater with the phenes than with acenes; A., 1946, 1, 189) and hence are more stable (cf. the Pries rule), e.g., (4 rings) 9:10-benzophenanthrene (7.24 β), 1:3-benzophenanthrene (7.20 β), and naphthalene (II) (6.94 β); (5 rings) 1:2:6-dibenzanthracene (8.92 β) and pent-
 (b) Condensed rings. Pyrene (6.66 β), perylene (6.44 β), the single to the triplet state (A., 1946, 1, 199) are approx. the same when calc. on one electron is 0.64 β and hence represents nearly half of all m -polyphenyls, e.g., m -terphenyl (1.32 β), m -quaterphenyl (1.64 β), m -sephenyl (1.96 β), p -sephenyl (0.96 β), so there may be some constancy of two (III) rings and supports the idea of conjugation. A double bond. One external CC bond (styrene 2.42 β , 1.6 β), a val. (6.76 β) representing the same increase (0.34 β) as that due to the first. A similar increase occurs with p -quaterphenyl (1.64 β) and Wheland (A., 1934, 1, 286), 1:4-C₁₀H₈(CHCH₃)₂ (9.16 β , i.e., $-(4 \times 2.5) + (3 \times 0.38\beta)$), and Wheland (A., 1934, 1, 286), 1:4-C₁₀H₈(CHCH₃)₂ (9.16 β) obtained the same val. for the m -isomer, m -C₁₀H₈(CHCH₃)₂ (X) (XIII) 2.84 β adds a similar amount, showing that here, too, conjugation across the ring has scarcely any effect, the excitation

AS 51.8 D. POLYNUCLEAR LITERATURE CLASSIFICATION

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Inclusion of hetero atoms in the molecular orbital method. A. Ya. Namiot and M. E. Dyatkina (Inst. Technol. Fine Chemicals, Moscow). *Comp. rend. acad. sci. U.R.S.S.*, 53, 809 12(1940). It was found that in systems in which the hetero atoms are not replaced by atoms of C, but rather by centers with a strong r field (such as N or O), the coulomb energy of the electron is larger by a quantity denoted by δ when compared with that in the field of the C atom. The resonance energy as a function of the parameter δ was then detd. for different values of δ in β units for 12 different systems. A comparison of the results shows that the introduction of only one new parameter in the method of mol. orbits does not give a sufficient picture of the systems examd., and further work is still necessary.

II P. Pool

ASB 554 METALLURGICAL LITERATURE CLASSIFICATION

[illegible]

DIATKINA, M.

The L. Ya. Karpov Physico-Chem. Inst., (-1946-).

"On the Problem of the Participation in the Hybridization of an
Unshared Electron Pair."

Zhur. Fiz. Khim., No. 4, 1946.

1ST AND 2ND GROUPS																										3RD AND 4TH GROUPS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>65. Structure of Complex Compounds, Part I, by Ya. K. Syrkin and M. E. Dyatkina. <u>ZHURNAL OSHCHEI KHIMII</u> 16, p. 342-378, 1946. Complex-forming atoms are distinguished by a small differences between the energy levels of the d, s, and p electrons, which make valencies of up to none possible. Structural formulae based on this assumption are advanced for ionic and non-ionic complexes of the type $[MR_x]$, where M is a metal, and R= CO, CN, NO, NO₂, or NH₃.</p>																																																			
<p>ASB-11A METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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DYATKINA, M. E.

PA 18T81

USSR/Chemistry - Valency
Chemistry - Affinity

Jun 1946

"Covalency Explanation of Pauling's Electrostatic
Valency Rule," M. E. Dyatkina, 1 p

"Zhur Fiz Khim" Vol XX, No 6

Offers covalency explanation of Pauling's rule by
using CuCl , SiO_2 and Cu_2O as example.

18T81

DYATKINA, M. Ye.

"Energies of Systems With Heteroatoms," Sub 19 May 47, Sci Res Order of the Labor
Red Banner Physicochemical Inst imeni L. Ya. Karpov.

Dr. Chem Sci
Dissertations presented for degrees in science and engineering in Moscow in 1947.

SO: Sum.No.457, 18 Apr 55

DYATKINA, M. YE.

USSR/Chemistry - Resonance
Chemistry - Isomerism

Nov 1947

"Energy Resonance of Open Chain with Heteroatoms at the Terminal Point of the Chain," M. Ye. Dyatkina, 4 pp

"Dok Ak Nauk" Vol LVIII, No 6

In a previous work, the author developed a method of molecular orbits in heterocyclic unions with nitrogen by means of calculations on: 1) the increased energy of the electron of the heteroatom, and 2) increased energy of the transfer interrelationship between the heteroatom and the carbon atom. In this article, the author discusses a like method for the study of the systems with heteroatoms at the end of the chains of doublets in such materials as unsaturated carbonyl unions. Submitted by Academician A. N. Franklin 16 Jun 1947.

3676

DYATKINA, M. E.

USSR/Chemistry - Systems
Chemistry - Nitrogen

Sep 1947

"Energies of Systems with Coupled Double Bonds and
Different Atoms," M. E. Dyatkina, 18 pp

"Zhur Fiziches Khim" Vol XXI, No 9, pp 989-1006.

A well-illustrated article discussing the resonance
energy of six-member nitrogen heterocycles. Dis-
cusses pyridine, pyrazine, heterocycles with con-
densed rings. Quantum mechanical methods were used
on six-member nitrogen heterocycles. These experi-
ments were conducted at the Physical Chemical Insti-
tute imeni L. Ya. Karpov in Moscow. Prof Ya. K.
Syrkin aided greatly with the experiments.

2419

DYAKTINA, M. YE.

PA 60T11

USSR/Chemistry - Heterocyclic Compounds Dec 1947
Chemistry - Isomerism

"Tautomerism of Derivatives of Heterocycles,"
M. Ye. Dyaktina, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVIII, No 7

Loss of energy of resonance in tautomerization of derivatives of heterocycles is greater than change of energy of resonance in tautomerization of derivatives of hydrocarbons. Therefore, noticeable inclination toward tautomerization will be observed only in oxide derivatives because of the great gain in energy of bond. Submitted by Academician A. N. Frankin, 16 Jun 1947.

60T11

Free radicals with hetero atoms. *Ad. Ljyathia, Khur.*
(Mikhael Khim. (J. Gen. Chem.) 10, 555-51 (1948).—
The magnitude of the energy change on disocn. of dimers
into free radicals for a system with hetero atoms differs
from the corresponding value for hydrocarbons because of
the difference in bond energies of C—C and X—X and
the variation of resonance energy on conversion of a hydro-
carbon radical into a radical with heteroatoms. For radi-
cals with the heteroatom bearing an unpaired electron, the
magnitude of the energy gain on disocn. increases with
with increase in δ (ratio of the coulomb energy of the
heteroatom X to that of the carbon atom C) and in γ (ratio
of the value of the exchange integral for C—X to that for
C—C) and noticeably exceeds the corresponding value for
pure hydrocarbon radicals. The increase in addnl. energy
of radicals assoc. with increase in stability of the C—X
bond is explained by the increase in energy and by the
increased contribution of structures in which an unpaired
electron resonates between different atoms of the system.
With values of the parameters, δ and γ , corresponding
to a N atom, the gain in resonance energy may cause dis-
ocn. of dimers in the presence of 4 aryl groups. In the
case of O two substituting groups suffice. This explains
the disocn. of tetraarylhydrazines and aromatic peroxides.

In systems with two hetero atoms γ increases the energy
gain and δ decreases it. In radicals in which the hetero-
atom is in the addnl. group and sepl. from the atom bear-
ing the unpaired electron by an odd number of atoms,
introduction of γ causes a reduction in the energy gain on
disocn. but δ does not alter these values so that with
 α - and γ -pyridylmethanes the tendency toward disocn.
must be less than with arylethanes. If the hetero atom
is located adjacent to the atom bearing the unpaired elec-
tron, γ increases the gain in energy but δ somewhat de-
creases it. In radicals in which the hetero atom is sepl.
from the atom bearing the unpaired electron by an even
number of atoms, the gain in energy in disocn. is similar
to that of the corresponding hydrocarbon radicals.

H. W. Hunker

ASD 514 METALLURGICAL LITERATURE CLASSIFICATION

1948-1950/1954

1951-1954

1955-1959

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2405-2409

DYATKINA, M. Ye.

PA 65T20

USSR/Chemistry - Resonance, Energy of Mar 1948
Chemistry - Valency

"Quantitative Conformity of Methods of Molecular
Orbits and Valence Structures," M. Ye. Dyatkina,
Physicochem Inst imeni Karpov, Moscow, 13 pp

"Zhur Fiz Khim" Vol XXII, No 3, pp 286-287

Compares the energies of resonance calculated
according to the methods of molecular orbits and
valence structures. Submitted 10 Jun 1947.

65T20

DYATKINA, M.

PA 68T20

USSR/Chemistry - Heterocyclic Compounds May 1948
Chemistry - Double Bonds

"Energy of Stimulation of Systems With Conjugate
Double Bonds and Heterocyclic Atoms," M. Dyatkina,
Phys Chem Inst imeni L. Ya. Karpov, Moscow, 12 pp

"Zhur Fiz Khim" Vol XXII, No 5, pp. 549-560

Energy of stimulation of a series of systems with
heterocyclic atoms was calculated by means of modi-
fied molecular orbit method, i.e., calculating in-
creased energy of electron at heterocyclic atom
(parameter δ) and increased resonance integral of
link Cx (parameter γ). Results are shown in tabular
form and analyzed. Submitted 9 Jul 1947.

68T20

S. Samvilov and M. Diatkina, Concerning the configuration of polyphenyls and triphenylmethyl. Pp. 1294-1301.

By the method of molecular orbitals are calculated the resonance energy of diphenyl, triphenyl and triphenylmethyl and various angles of rotation of the rings relative to the planar configuration. A relation has been found between the inter-action energy of the ortho-atoms of hydrogen in the above molecules and the angle of rotation. In the most stable configurations of molecules, the angle between phenyl rings must be about 30° .

The Karpov Physical Chemical Inst.
Moscow
April 9, 1948

SO: Journal of Physical Chemistry (USSR) 22, No. 11, 1948

The basicity of heterocycles. Al. E. Dyatkina. *Doklady Akad. Nauk S.S.S.R.* 59, 517-518 (1948) (in Russian).
Differences in the basicity of heterocycles, particularly its decrease with increasing no. of condensed benzene rings (pyridine, quinoline, acridine) and its dependence on the position of the hetero atom (quinoline, isquinoline), are interpreted in terms of change of resonance on transition to the ionic state. In particular, on transition of the N atom to N^+ , the excess of the strength of the π -bond C-N over the CC bond is further increased, and, inasmuch as in heterocycles with the hetero atom in a system of conjugate bonds, as in pyridine, the resonance energy increases with increasing resonance integral γ , whereas it decreases in the case of quinoline, i.e., ionization is accompanied by a gain of energy in the former case, and pyridine is more strongly basic ($K_b = 1.71 \times 10^{-5}$) than quinoline

($K_b = 1.0 \times 10^{-6}$). In general, the basicity is the higher the greater the increase of the resonance energy with increasing γ . The decrease of basicity in the order pyridine, quinoline, acridine, is in qual. agreement with this postulate, the increase of resonance energy with γ increasing from 2 to 3, being 4.0, 0.47, and 0.30, resp., for pyridine, quinoline, and acridine; the corresponding resonance integrals are 4.0, 4.47, and 4.77, respectively; the latter should be greater than the former, which is borne out by the fact that the basicity of quinoline is greater, whereas there is a discrepancy with the potentiometric value for quinoline. The same postulate permits prediction of at least two orders of decreasing basicity for heterocycles for other hetero atoms, where available. H. Thoen

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Hybrid orbitals for the coordination numbers 7 and 9. M. G. Shirmazan and M. B. Uyatkina, *Doklady Akad. Nauk S.S.S.R.* **77**, 75-8 (1961).—Of the two known configurations with a coordination no. 7, the configuration of ZrF_7^{3-} , an octahedron with one extra atom in the center of a face, symmetry C_{3v} , can arise through the hybridization of d^2sp^3 and d^3p_z ; the type TdF_7^{3-} , a triangular prism with one extra atom in the center of a square face, symmetry C_{2v} , can arise through the hybridizations d^2sp^3 , d^3p_z , and d^3p_x . Two new configurations are calculated by the method of

Kimball (C.A. 34, 1534⁷), by group-theoretical calcul. of the irreducible representations based on the at. orbits s, p, d, f , and then on the valence σ -orbitals. A configuration with the coordination no. 7, with the σ -bonds directed towards the corners of a pentagonal bipyramid, symmetry D_{3h} , can arise through the hybridizations sp^3d , sp^3df , sp^3dy , sp^3dz , sp^3fz , sp^3fx , sp^3fy ; of these only one does not involve f electrons. A configuration with the coordination no. 9, a trigonal prism with 3 extra atoms over the centers of the rectangular faces, symmetry D_{3h} , can arise through the hybridizations sp^3d , sp^3dy , sp^3dz , sp^3dx , sp^3dy , sp^3dz , sp^3dx , sp^3dy , sp^3dz ; sp^3d , sp^3dy , sp^3dz , sp^3dx , sp^3dy , sp^3dz , sp^3dx , sp^3dy , sp^3dz . N. Thon

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Resolutions of the colloquium on the theory on chemical structure in organic chemistry held in Moscow (June, 1951). *Zhur. Fiz. Khim.* 25, 988-91 (1951).—Ya. K. Syrkin, M. E. Dyatkina, M. V. Vol'kenshtein, A. I. Kiprianov, and others are criticized for their idealistic and mechanistic concepts of resonance. The Conference calls upon the chemists and scientists working in related fields of physics, to develop creatively the theory of chem. structure of A. M. Butlerov along the principles of dialectic materialism under the guidance of the work of I. V. Stalin.

M. B.

DYATKINA M. YE.

238T7

USSR/Chemistry - Valency

Feb 52

"Valence Direction of Valency Bonds for Coordination Numbers Six and Eight," M. G. Shirmazan and M. Ye. Dyatkina, Physicochemi Inst imeni L. Ya. Karpov

"DAN SSSR" Vol 82, No 5, pp 755, 756

Arrangement of bonds having symmetry of C_{3v} cannot occur without the participation of f-electrons. Since the Ta atom lacks f-electrons, it is not likely that it has the TaF_8^3 structure indicated in the literature. Presented by Acad A. N. Frumkin 13 Dec 51

238T7

DICTIONARY, p. 15.

USSR/Chemistry - Valency

Apr 53

"Directed Valency With Participation of f-Electrons," M. G. Shirmazan, M. Ye. Dyatkina, Phys-Chem Inst im L. Ya. Karpov, Moscow

Zhur Fiz Khim, Vol 27, No 4, pp 491-494

Found the directions in which there is maximum concentration of the electron cloud. Determined maximum values of f-functions and carried out series expansions of f-functions to obtain irreducible representations of different symmetry groups. Found the directed valencies in which s, p, d, and f electrons participate for 22 different dispositions of σ - bonds at coordination numbers 2-9.

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DYATKINA, M. E.
USSR/Chemistry

Authors : Dyatkina, M. E.

Title : Thermodynamic functions of normal alcohols (propyl, butyl and ethylene glycol).

Periodical : Zhur. Fiz. Khim. 28, Ed. 3, 377-388, March 1954

Abstract : The thermodynamic functions of normal alcohols (propyl, butyl and ethylene glycol) were calculated. The following molecular parameters were adopted in the calculation: molecular spaces C-C 1.54 Å, C-H 1.09 Å, C-O 1.42 Å, O-H 0.96 Å, the angles at atoms C are tetrahedral, angles at C-O-H 105°. At these parameters in the case of propyl alcohol the main axis x forms an angle of 27°56' with the axis parallel to the lines of bonds H₃C-CH₂ and CH₂-O; the axis y is perpendicular to the plane CCCO. The values of the atom coordinates relative to the main axes are given in table. Seven references; 1 USSR. Tables.

Institution :

Submitted : November 27, 1952